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Electronic Business

FOR MANAGEMENT IN ELECTRONICS, COMPUTER & SYSTEMS COMPANIES—WORLDWIDE

OCTOBER 30, 1989

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Rod Canion, Compaq's president and CEO

Electronic Business

FOR MANAGEMENT IN ELECTRONICS, COMPUTER AND SYSTEMS COMPANIES—WORLDWIDE

VOL. 15, NO. 21 OCTOBER 30, 1989

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Methodical, thorough, conservative, boring. Those adjectives have been used at one time or another to describe the Houston-based computer company. While such a style may contrast directly with other high-flying vendors such as Apple and Sun Microsystems, Compaq's conservative business philosophy has served it well. A secret to Compaq's success, offers top executive Rod Canion: "We concentrate on laying the foundations correctly."

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In an attempt to bolster the U.S. edge in supercomputers, the Bush administration plans to spend nearly $2 billion over five years to improve communication links between existing and future models of the high-speed machines. But more juggling will be needed if the network is to spread beyond academia.

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24 Compaq stays the course

How has Compaq succeeded so well in a market dominated by IBM and crowded by an uncountable number of personal computer "clone" makers? Some principal reasons: Compaq focuses on the high performance end of the market, has the ability to develop products quickly using leading edge technology, establishes name brand recognition, and sells exclusively through authorized dealers and resellers.

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There's good and bad news in the personal computer industry. On the down side, market growth has slowed, and, for smaller vendors, the business arena is increasingly being dominated by the triumvirate of IBM, Compaq and Apple. But the silver lining is that the PC market is one in which "slow growth" this year still means sales increases of 15% to 20%, surpassing most segments of the computer industry.

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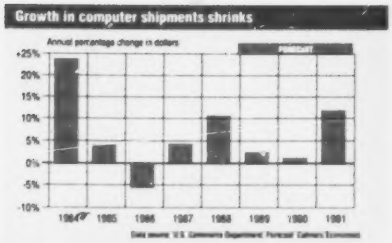
With 31 years woven into the fabric of Hewlett-Packard Co., president and CEO Young is the management distillation of the fabled "HP way" set down by legendary founders William Hewlett and David Packard some 50 years ago. According to those who have observed him, Young epitomizes the *right* way to run a U.S. manufacturing firm. So, perhaps, it is no surprise that Young and HP are the winners in this year's annual ELECTRONIC BUSINESS Best Executives and Best Companies survey.

42 The Best Executives and the Best Companies

This year's survey is based on the opinions of ELECTRONIC BUSINESS subscribers from the management and financial communities. Not surprisingly, differences exist between the two samples because of their varying perspectives on the electronics/computer industry.

Cover photograph: Jonathan Levine



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MANAGING RESOURCES

50 High tech steps into an uncertain tax future

One year after the full force of the 1986 tax reform hit corporate America, the electronics industry appears to have survived the worst of the bloodletting. According to the exclusive ELECTRONIC BUSINESS tax survey, the top electronics industry taxpayers saw their total bills rise only 7% last year. The big question, though, is, what's in store tax-wise in 1990? The answer: uncertainty.

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While smaller U.S. power supply makers grasp at strategies for survival under adverse conditions, recently spawned British multinationals — Astec and Unitech — are targeting customers who themselves are increasingly manufacturing and marketing multinationally. The U.S. companies, to keep pace, may have to copy such tactics.

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A short year ago, Wan Runnan's Beijing Stone Computer Group was China's top private computer company. Today Wan is a political exile in Paris assessing where it all went wrong.

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Coming off a three-year period of brisk sales, distributors are repositioning themselves to weather some tough times. As component makers push for bigger sales volumes and customers demand more value-added services, distributors are shifting their focus to taking a much harder look at profitability.

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Where there is Leon Machiz, there is fire. The new chairman and chief executive of Avnet is turning up the heat on the largest electronics distributor in order to cut expenses and bring more to the bottom line.

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With backlogs at historic lows, the computer industry may be getting into a real bind should the economic contraction go deeper than currently expected.

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While other vendors try to remake the computer industry in their own image, Compaq has concentrated on building sales and profits — its own way

Compaq stays the course

BY RICK WHITING

Methodical, thorough, conservative . . . yes, even boring. Michael S. Swavely acknowledges that at one time or another, Compaq Computer Corp. has been described as all of those and more.

"And we're not ashamed of that," says the personal computer company's president of North American operations. "We've just done a very consistent job of managing our business."

Compaq's business style directly contrasts with other high-flying, counterculture computer vendors such as Apple Computer Inc. and Sun Microsystems Inc., whose charismatic leaders seek to turn the computer industry on its ear. At Compaq, "management's goal is to benefit from change, rather than to cause it," concludes a recent Wall Street analyst's report on the company entitled "Compaq Computer: Profits, Not Prophets."

High-profile Sun president and chief executive Scott McNealy was once quoted as saying that Sun's business decisions were often based on intuition and emotion and, in the case of one product, "90% assumption and 10% fact."

Compare that with an answer Compaq president and chief executive Joseph R. "Rod" Canion gave when asked about Compaq's strategy for entering the Japanese market: "We will go into Japan as we have gone into other areas, which is, very well prepared. Having done our homework on the market, having tailored our strategy for the market. What's delayed our entry into Japan is that it is not like any other market we've ever been in. So a lot more dedication of resources is necessary to do it right."

Currently, Compaq has little presence in Japan, and Canion says that it will be one to two years before the company begins a serious effort to crack that market.

While that studied approach may not generate the cult-like aura that surrounds more impulsive companies such as Sun and Apple, Compaq's conservative business philosophy has served it well. The company holds an estimated 6.9% share of the world (dollar volume) personal computer market; for comparison, IBM holds 15.3%. Compaq has become IBM's major competitor in the microcomputer arena, and this year Compaq is expected to report sales of around $3 billion, up from just over $2 billion in 1988.

Secrets of success

How has Compaq succeeded so well in a market dominated by IBM and crowded by an uncountable number of personal computer "clone" manufacturers? Compaq executives and industry watchers cite a number of reasons: the company's focus on the high performance end of the market; its ability quickly to develop products using leading edge technology; the ability to establish name brand recognition; and the decision to sell exclusively through authorized dealers and resellers.

But Compaq's strengths will be tested in the near future. The vendor could face competition from a more aggressive IBM as both race to incorporate Intel Corp.'s 80486 microprocessor in new products. Workstations are rapidly coming down in price, pressuring companies like Compaq that sell high-end personal computers. The success of the Extended Industry Standard Architecture (EISA) bus technology, championed by Compaq and other vendors as an alternative to IBM's Micro Channel Architecture (MCA), is in doubt. And some question whether Compaq's dealer-only strategy can continue as the company sells increasingly complex products.

The company never would have gotten as far as developing and shipping a product without the necessary leadership. "The company has the best management team in the PC business," Shearson Lehman Hutton Inc. analyst Doug van Dorsten unequivocally stated in an August report on Compaq, "and its performance over the last seven years has been of the highest caliber."

The idea of a start-up to develop

Jonathan Levine

and market a portable personal computer was conceived in 1981 by Canion, James M. Harris and William H. Murto, at the time all employed in Texas Instruments' computer and peripherals operations. In one of those humble-beginnings-turned-legend, the three met with an industrial designer in a Houston pie shop to discuss their idea and the designer drew a sketch of the portable on a placemat. (They have held on to the placemat ever since.)

With the rendering, Compaq was able to secure venture funding and the company was on its way. Incorporated in February 1982, the company recorded net income of $4.7 million on sales of $111.2 million in its first full year of operation. Since going public in December 1983, the company has never reported a quarterly loss.

Harris served as vice president of Compaq's Advanced Computer Division, while Murto held the post of vice president for advanced computer marketing. (Today, Harris is senior vice president for engineering; Murto left the company in 1987.) Benjamin M. Rosen, of the Sevin Rosen Management Co., Compaq's major venture capital backer, has held Compaq's chairmanship since its founding.

By the end of 1982, Compaq's senior management team was reinforced by other TI expatriates. Chief among them was Swavely who, before joining Compaq, was head of TI's professional computer marketing efforts. Originally Compaq's vice president

Standards battle: Compaq taking a gamble?

At first glance, Compaq Computer Corp.'s championing of the Extended Industry Standard Architecture (EISA) appears to be a dramatic departure for the usually staid personal computer vendor. Leading an industry insurrection, even against arch rival IBM, seems out of character for the company.

But Compaq president and chief executive Rod Canion argues that it is IBM that has strayed from the path of industry standards with its Micro Channel Architecture. The 32-bit proprietary MCA technology on which IBM based its PS/2 line of microcomputers is the heart of the giant company's effort to beat back the wave of clones that have been eating away at its market share.

In September 1988, Compaq and eight other personal computer vendors, instantly tagged "the Gang of Nine" by observers, proposed developing a new microcomputer bus structure that would remain compatible with the existing standard architecture — commonly known as the ATbus, but dubbed the Industry Standard Architecture, or ISA, by the group because of IBM's copyright on "AT." Hence, Extended ISA, or EISA.

Canion expects sales of EISA-based products to grow slowly, arguing that the powerful technology will only be needed by a small number of the company's customers. Initially the increased input/output offered by the 32-bit bus architecture is needed only for personal computers used as network and file servers. Even manufacturers that plan to unveil microcomputers using EISA expect those products to account for only 5% of their sales for the first year or so.

Canion says that EISA simply establishes a future growth path for manufacturers and users of personal computers using the 16-bit ISA technology. "Nobody needs EISA for their existing products, or their existing applications," he says. "They only need to know that they can have it available to them when they do buy higher performance PCs in the future. Our goal is not to sell as many EISA machines as we can, it's to allow our high-end machines to increase in performance and maintain compatibility."

But industry-watchers are doubtful about EISA's future. IBM has been shipping MCA-based PS/2 microcomputers for two and a half years, while it will be the end of this year at the earliest before the first EISA-based computer leaves the loading dock. "I guess I'm somewhat skeptical of EISA, because there are 2 million MCA machines out there and zero EISA machines," says UBS Securities Inc. vice president Marc G. Schulman. Much depends upon how quickly Intel Corp., which is developing the EISA chipset, can work out the technology's bugs and ramp up volume production.

Meanwhile, cracks are appearing in the EISA stronghold. Tandy Corp. and Ing. C. Olivetti and Co. SpA, among EISA's original backers, have introduced MCA personal computers. So have other industry giants like NCR Corp. (Along with Olivetti, Tandy and Compaq, "Gang of Nine" members include Zenith Data Systems Corp., Hewlett-Packard Co., NEC Information Systems Inc., Epson America Inc., AST Research Inc. and Wyse Technology.)

Despite the gamble, Schulman says that Compaq had no choice but to lead the EISA forces. Compaq depends on being the personal computer technology leader to distinguish itself from its competitors, and adopting the proprietary MCA technology would make that impossible. But Schulman believes that Compaq may either have to swallow its pride and debut an MCA product or concede market share to IBM and MCA clones.

Last July, Compaq and IBM signed a patent cross-licensing agreement covering computer and peripheral technology — including the MCA architecture. But Canion insists that Compaq still has no plans to add MCA to any of its products. The personal computer manufacturer halted all MCA development work more than a year ago.

Ironically, nearly all observers say that neither bus architecture is technologically superior and that politics and marketing muscle will determine the eventual winner. Other analysts argue that the whole MCA/EISA imbroglio is a tempest in a teapot. "The MCA/EISA bus war has all of the excitement of the American invasion of Grenada," wrote The First Boston Corp. analyst Charles R. Wolf in a recent report. □

for marketing, Swavely was named president of North American operations earlier this year.

Also coming on board was John F. Gribi, controller of TI's minicomputer operations, who became senior vice president for finance and chief financial officer. He is currently senior vice president for corporate administration and serves as the company's chief troubleshooter. And Gary Stimac, engineering manager at TI, joined Compaq as a systems engineer and is now senior vice president for systems engineering. Stimac's duties include overseeing the company's crucial research and development efforts.

Collective decision making

A key reason for Compaq's prosperity has been its ability to utilize — rather than squander — the talents of its management. Canion, according to Swavely, recognizes the fact that no one has all the answers and so takes a collective approach to decision making.

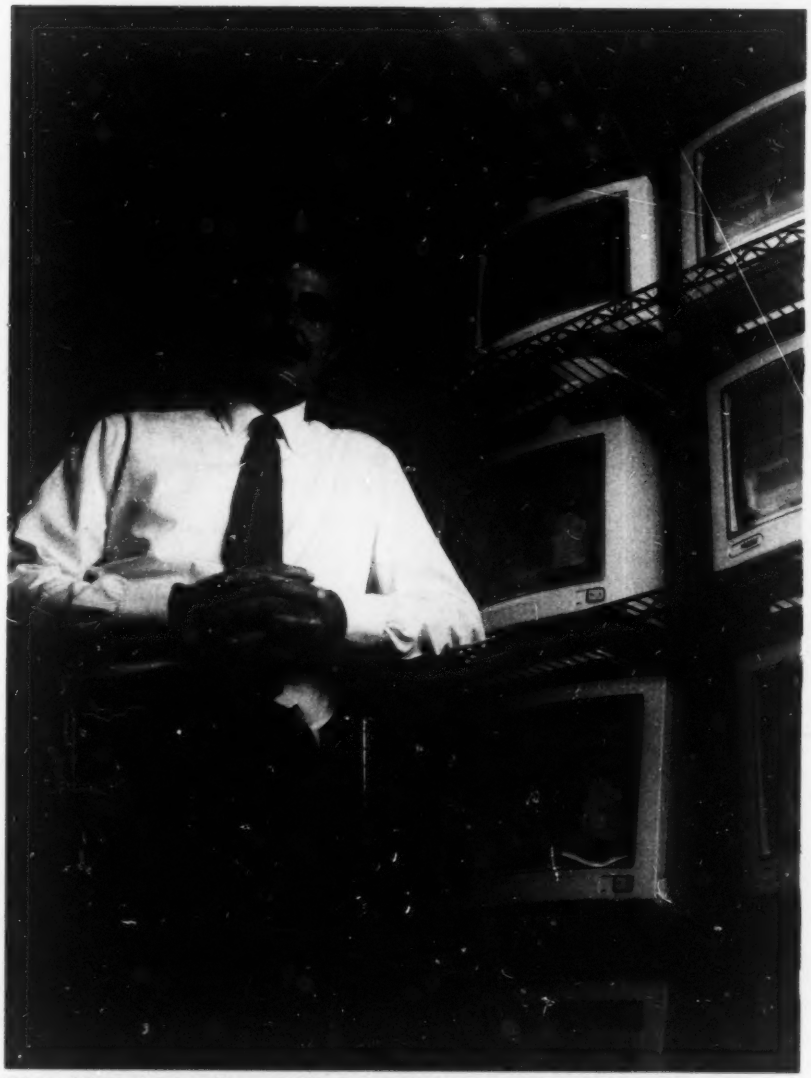
Canion, in turn, says that because Compaq grew rapidly from the start, its management had to take an "almost naive, common sense" approach toward decision making, one that made full use of the management's collective experience.

"We have a team process that leads to getting to the best answer," Canion says. "We've encouraged all the things that it takes to have a team spirit. All companies want it, most of them talk about it, but few companies really have it, at least to the degree to which Compaq has been fortunate enough to develop and maintain it."

Compaq's decision-making process also means that there is less corporate infighting, the chief executive maintains. "My belief is that it is pretty typical, particularly in large companies, to have people fighting with each other to be right. And of course in that environment, a lot of energy is wasted fighting each other rather than your competitors."

Compaq's environment has led to a management stability rarely found in the industry. Nearly all of the senior managers who joined Compaq in its early days are still at the company, a fact that Canion calls "fundamentally critical" to its success.

Early on, Compaq distinguished itself from other vendors by staking out the high end of the personal computer market. Rather than competing on price, Compaq chose to market systems that offered leading edge technology and high performance. Shearson Lehman Hutton calculates that worldwide, the average selling price of Compaq's systems is $3,300, compared with $2,300 for IBM and $2,085 for the personal computer industry overall.



Michael Swavely, president of North American operations: "We've never positioned ourselves based on price. We sell a better product, not a cheaper product"

"We've never positioned ourselves based on price. We sell a better product, not a cheaper product," Swavely says, arguing that selling on price alone does nothing to engender customer loyalty. Compaq's strategy, of course, also allowed the company to command higher prices and profit margins for its products. "We've never been ashamed to ask for more money for our products," he says.

"To be completely accurate, Compaq never saw itself as a clone," Canion says. "We were lumped into this very large group, but we've never come out with a product that was just like IBM's or anybody else's. The only commonality was that we ran the same software and the same peripherals as other systems." He points to the Compaq Portable, the company's first product, as a prime example.

Although Compaq offers desktop

systems based on the older 80286 microprocessor, its bread and butter has been its Deskpro 386 line of 80386-based personal computers ever since the first model was introduced in September 1986. Earlier this month Compaq moved to strengthen that market position by unveiling a laptop weighing only six pounds.

Compaq was a late entrant to the laptop computer market, but the SLT-286, unveiled just one year ago, already generates $350 million to $400 million in sales and accounts for 50% of all laptop sales in the United States, according to Shearson Lehman Hutton.

Compaq uses the same Intel microprocessors and Microsoft Corp. operating systems as do nearly all personal computers, excluding those from Apple. But the company adds value to those standards, designing many of its own components and working closely with manufacturers of others, such as disk drive supplier Conner Peripherals Inc., in which Compaq holds a 40% financial interest.

Compaq is best known for its ability to quickly utilize new technology and ship leading edge products. In September 1986, the company captured the limelight by unveiling the industry's first 80386-based personal computer, beating IBM to the punch by months. Analysts say that strategy allows Compaq to increase cash flow and grab market share before other vendors can follow suit.

"Sooner and better is a pretty powerful combination," concludes Marc G. Schulman, vice president with the UBS Securities Inc. Wall Street firm.

"It's a part of our system and our culture now," Canion says of Compaq's rapid technology cycle. "We can't stay ahead of all the people all of the time, but we can stay ahead of most of the people most of the time, if we keep doing what we've been doing."

Early on, Compaq distinguished itself by staking out the high end of the PC market

Compaq's technology turnaround is remarkable because marketing and sales operations are brought into the design process early on.

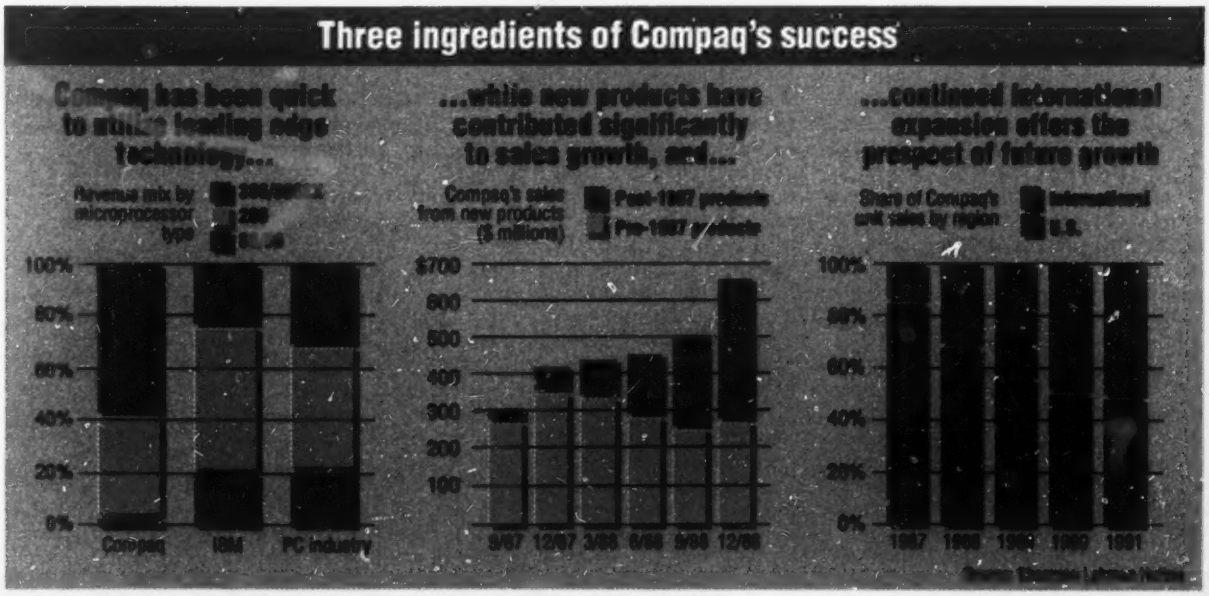
Along with maintaining close relationships with such suppliers as Intel and Conner Peripherals, product marketing director Lorie Strong says that Compaq also "works hard to understand what the market priorities are" and so can better focus its development and marketing efforts. She says that comes from maintaining close contact with end-users despite Compaq's dealer-only sales strategy.

"One of Compaq's key strengths is the degree to which management stays attuned to customers, markets and changes in both," agrees van Dorsten's report. "Good strategic vision and planning, utilizing this market/customer sensitivity, coupled with the best execution in the PC business is what earned Compaq its strong market position."

Users cite a number of reasons for choosing Compaq systems over those from other vendors. Computer Aided Planning Inc., a Grand Rapids, Mich., developer of office planning and furniture specification software, uses its personal computers for publishing, graphics, database and software development chores. Programmer Bill Day cites another reason most of the 40 microcomputers at the company are Compaq: "People walk in the door, they see a Compaq machine, and it presents a strong image to our clients," he says.

Lacking a sales army like IBM's, Canion and company recognized from the start that selling through dealers would be the most effective means of reaching the largest potential market. To avoid channel conflict and instill dealer loyalty, Compaq's management decided that it would distribute its personal computers exclusively through resellers and retail dealers.

Today, Compaq, IBM and Apple are acknowledged to have a firm lock



on the dealer channel, leaving second- and third-tier vendors to struggle for the little remaining shelf space and settle for narrow profit margins as they try to compete on price.

Cementing Compaq's ties with its dealers is the vendor's generous "soft dollar" dealer support program called Salespaq. Through the program, Compaq offers its resellers credit to finance inventory, personal computers to use for demonstrations and training, and other incentives to push Compaq products.

Split with Businessland

Still, those incentives were not enough to prevent a falling out last February between Compaq and Businessland Inc., the national computer retail chain that accounted for 7% of Compaq's sales. In April, Compaq stopped selling its products through the dealer.

Canion explains that Businessland built up its overhead expenses by emphasizing support and products with added value and yet attempted to compete on price with other dealers. Canion says that required Businessland to seek special discount deals with vendors in order to turn a profit, an idea that the chief executive says would have violated Compaq's policy of treating its dealers equally.

"It was a very difficult decision and a fairly painful process for us," Canion says of the Compaq-Businessland split. Although he acknowledges that the break with the dealer left a gap in the company's sales, he says the hole has since been filled by other resellers.

Nearly half of Compaq's revenue comes from business outside the United States, and much of that — $734 million of the company's $2.06 billion 1988 revenue — comes from Europe. The European personal computer market has been growing at twice the rate of the U.S. market, and Compaq moved to establish a presence on the continent in 1983 by establishing a dealer channel there before most U.S. vendors. By the first quarter of this year, Compaq had snagged 10.2% of the European personal computer market, says UBS Securities, surpassing native vendor Ing. C. Olivetti and Co. SpA to become the second largest microcomputer vendor on the continent behind IBM.

Canion recognizes the fact that Compaq is not in complete control of its own destiny

Compaq owes a great deal of its European success to Eckhard Pfeiffer, who was head of Texas Instrument's European consumer electronics operation when he was recruited in September 1983 to take charge of Compaq's European sales efforts. More recently, he has been named president of international operations.

Desktop and portable personal computers sold in Europe are built at Compaq's assembly plant in Erskine, Scotland, on the outskirts of Glasgow. The company is adding 230,000 square feet to the plant's manufacturing area, bringing its total to 490,000 square feet, to meet demand. And last month, in an illustration of how personal computer vendors are up and minicomputer manufacturers are down, Compaq purchased ailing Wang Laboratories Inc.'s Stirling, Scotland, facility, which has 135,000 square feet of manufacturing space.

Looking ahead

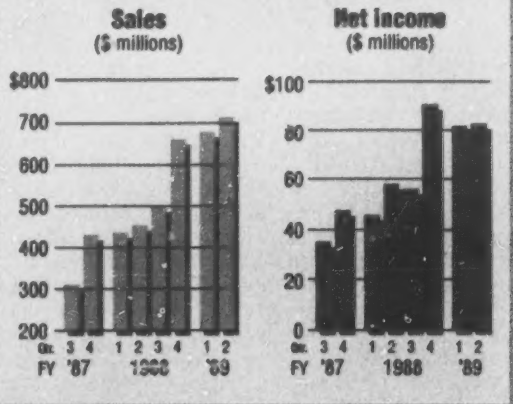
Analysts' expectations for Compaq's 1989 sales hover around the $3 billion mark, a 46% gain over 1988's $2.06 billion in sales. And Wall Street estimates for fiscal 1990 (ending Dec. 31) fall in the range of $3.8 billion to $3.9 billion, representing growth of some 29%. Overall, Compaq is expected to show yearly sales and earnings growth of 20% to 35% over the next three to five years. Compaq placed ninth on ELECTRONIC BUSINESS' list of fastest-growing companies with a five-year compounded average annual growth rate of 79.4% [ELECTRONIC BUSINESS,

Compaq at a glance

	1988	1987	Change
Sales ($ millions)	$2,066	$1,224	+68.7%
Net income ($ millions)	$255	$136	+87.3%
Net income/sales	12.4%	11.1%	—
Cost of sales/sales	59.7%	58.6%	—
R&D/sales	3.6%	3.8%	—
Marketing, G&A/sales	19.2%	18.5%	—
Number of employees	6,056	4,109	+47.4%
Sales per employee	$341,078	$297,699	+14.5%
Net income per employee	$42,147	$33,163	+27.1%
Capital expenditures/sales	13.2%	8.5%	—
Current ratio	2.32	1.99	—
Debt/equity ratio	0.34	0.37	—
Foreign sales/sales	38.6%	26.0%	—

All figures for fiscal year ending December 31.

Quarterly results



Source: Company reports

May 1, 1989.]

Not surprisingly, Canion is cautious about predicting the future. "Since I could not possibly have imagined being a $3 billion company five years ago, I would hesitate to project any sales," he says. "We concentrate on laying the foundations correctly. If we lay the foundations correctly, then we will grow relative to the opportunities."

Canion and Swavely both believe that as personal computers become more powerful and are used for new applications, understanding and penetrating the new markets opened up by those applications is the major challenge facing Compaq.

"A whole new level of applications will be opening up for our products," Swavely says. He cites growing sales of high-end personal computers for CAD/CAM applications and for use as network servers — markets that have traditionally been the domain of workstations and minicomputers, respectively.

Shearson Lehman Hutton estimates that 40% to 45% of Compaq's 80386-based system sales already go for CAD/CAM and network server applications. That trend will accelerate when Compaq unveils even more powerful computers in the next few months incorporating the EISA technology (see accompanying box) and Intel's next-generation 80486 microprocessor.

Selling microcomputers for use as network servers and workgroup, or multiuser, applications likely represents the biggest change in Compaq's marketing future. In addition to competing more and more with minicomputer and workstation vendors for sales, more complex products could mean increased demands from users for service and support.

That, in turn, could force Compaq to rethink its dealer-only distribution strategy. Dealers could begin demanding better profit margins and more "soft dollar" incentives to cover increased service and support expenses. Or, Compaq itself may have to develop its own service and support infrastructure.

"The question is, can resellers sell $15,000, $20,000, $40,000 systems?" Kimball Brown, a senior analyst with Prudential-Bache Securities Inc. "Resellers I've talked to are confident they can support [such systems]. We'll see."

Although not ruling out the possibility of other sales channels, Canion says that, to date, the dealer channel has done a good job of keeping pace with technological development and he does not foresee any change soon in Compaq's strategy.

UBS' Schulman believes that personal computer vendors — particularly those like Compaq with products at the high end — will begin to feel the competitive heat from workstations that are rapidly improving in price/performance. In his "Profits, Not Prophets" report, Schulman speculates that Compaq may one day have to adopt the same Reduced Instruction Set Computer (RISC) technology that is driving the workstation market.

Analysts also say that Compaq could face increased competition from IBM. Canion and industry watchers alike dismiss IBM's introduction in mid-June of a 486 add-in board for the PS/2 Model 70-A21 as a preemptive publicity strike. But if IBM unveils a complete 486 PS/2 that matches Compaq's products in performance, or is aggressively priced, Compaq may be in for a fight. "My sense is that, technologically, IBM is becoming more assertive," Schulman says.

Compaq's share of U.S. personal computer market

Share of the market's dollar value

Total 1988 U.S. market: $35 billion

Source: Shearson Lehman Hutton

But Canion says that IBM has been Compaq's main competitor all along, and he expresses confidence that the smaller company will be able to stay ahead. Prudential-Bache's Brown agrees. "Even as a $3 billion company, Canion and a few top managers can sit around and make a major decision in a few hours," according to Canion. "IBM takes 200 signatures to get a product out."

Taking new technology and quickly incorporating it into mainstream products will remain a major challenge for Compaq, according to Murray Francois, senior vice president for corporate quality and materials. "We are the leading edge of technology. So we have to utilize technologies that are immature and unstable."

But Compaq, at times, finds itself dependent on other manufacturers to supply that technology. There have been reports that volume shipments of the 80486 microprocessor and the EISA chipset may not begin on time. Prudential-Bache's Brown says that could have the hardest impact on Compaq, since the company depends on leading edge products to gain and hold market share and maintain profit margins.

"They are not in total control of their future," Brown says of Compaq. And as the company waits for the 80486, other personal computer vendors catch up. Between this year's March and June quarters, Compaq's unit share of the 80386 microcomputer market plunged from 48% to 38%.

Brown, nevertheless, says that Compaq will "undoubtedly" stay ahead in the technology race. He says that even if other vendors announce 80486-based products first, "Compaq will be the first to volume ship, in my view. And volume shipping is what matters."

Canion recognizes the fact that Compaq is not in complete control of its own destiny. He says a goal of the company is to grow and hold a large enough market share "so that we have more of a say about our future direction, which you have much less ability to affect if you are a small player back in the pack."

Canion acknowledges that Compaq could be hurt by an economic slowdown or some other external force beyond its control. But he expresses confidence that, unlike other fast growing computer companies that have imploded, Compaq is on a solid foundation. "I don't believe that the pitfalls Compaq will have to deal with will involve our ability to execute internally," according to Canion. □

The best companies in the electronics industry

For a different perspective on the electronics industry, this year's survey for the Best Company is based on opinions of ELECTRONIC BUSINESS subscribers from both the management and financial communities.

	Management community	Financial community
CAPITAL EQUIPMENT		
	Hewlett-Packard 68.8%	**Hewlett-Packard** 64.3%
	Tektronix 8.5%	**Applied Materials** 24.8%
	Base: 567	Base: 129
COMMUNICATIONS		
	AT&T 30.9%	**Andrew** 61.3%
	Motorola 26.6%	**M/A-Com** 13.2%
	Base: 531	Base: 106
COMPONENTS		
	AMP 36.5%	**Oak Industries** 47.0%
	AVX 18.0%	**Sprague** 27.4%
	Base: 512	Base: 117
DISTRIBUTION		
	Arrow 31.2%	**Avnet** 34.7%
	Avnet 24.5%	**Premier Industrial** 17.8%
	Base: 486	Base: 101
GOVERNMENT		
	Texas Instruments 20.9%	**E-Systems** 19.4%
	Motorola 19.1%	**Motorola** 18.4%
	Base: 498	Base: 103
MAINFRAMES		
	IBM 56.5%	**IBM** 46.8%
	Cray Research 23.7%	**Cray Research** 24.2%
	Base: 540	Base: 124
MICROCOMPUTERS		
	Compaq 37.5%	**Compaq** 54.5%
	Apple 29.3%	**Apple** 28.8%
	Base: 547	Base: 132
MINICOMPUTERS		
	DEC 32.8%	**Sun Microsystems** 35.8%
	Sun Microsystems 30.3%	**DEC** 25.4%
	Base: 548	Base: 134
OFFICE EQUIPMENT		
	IBM 44.8%	**IBM** 35.5%
	Xerox 25.5%	**Pitney Bowes** 29.8%
	Base: 525	Base: 121
PERIPHERALS		
	Seagate 35.5%	**Conner** 33.6%
	Conner, Wyse (tie) 10.5%	**Seagate** 29.9%
	Base: 487	Base: 107
SEMICONDUCTORS		
	Intel 32.7%	**Intel** 53.3%
	Motorola 20.3%	**Chips & Technologies** 10.7%
	Base: 542	Base: 122
SOFTWARE		
	Microsoft 57.4%	**Microsoft** 43.8%
	Lotus 17.6%	**Computer Associates** 21.5%
	Base: 535	Base: 121
DIVERSIFIED ELECTRONICS		
	General Electric 26.2%	**General Electric** 28.2%
	3M 19.7%	**3M** 24.8%
	Base: 538	Base: 117

High tech steps into an uncertain tax future

An ELECTRONIC BUSINESS survey reveals that while the top electronics industry taxpayers saw their total bills rise only 7% last year, long-term planning will be "virtually impossible"

By BRUCE C.P. RAYNER and LINDA STALLMANN

Mild respite. That's what top electronics companies got on their 1988 tax bill, according to an exclusive tax survey conducted by ELECTRONIC BUSINESS. One year after the full force of the 1986 tax reform hit corporate America, the electronics industry appears to have survived the worst of the bloodletting. The big question is, what is in store for the tax code in 1990? The answer: uncertainty.

1988 was a pretty good year for the electronics industry as far as taxes are concerned. On average, the companies surveyed saw only a 7% increase in their total tax bills — down from a 27% rise in 1987 tax payments. But taxes as a percentage of sales declined from 4.3% in 1987 to 3.85% in 1988.

ELECTRONIC BUSINESS' survey encompasses 133 publicly held, U.S.-owned electronics and computer companies that derive at least 70% of their sales from electronics.

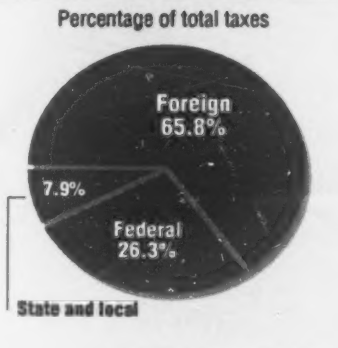
A drop in tax rates was also a welcome relief for the electronics industry. The effective, or actual, tax rate for 1988 for the companies surveyed fell to 37.3%, down from 39.4% in 1987 and 42.9% in 1986. If IBM were removed from the list, the average effective tax rate in 1988 would be an even lower 36.2%.

The biggest contribution to lower tax bills came from an unexpected 20.5% decline in federal taxes, measured as a percentage of sales. At the same time, state and local taxes fell by 3.8% in 1988 and foreign taxes held more or less steady, dropping by 1.8%. The magnitude of the federal tax decline is surprising, considering that tax reform was aimed at extracting *more* tax dollars from industry by closing loopholes. This is explained, in part, by generally lower profits coupled with a higher percentage of business coming from overseas.

It is still foreign taxes that account for the greatest share of the electronics industry's taxes. The top electronics money makers saw a rise in the percentage of their taxes that went overseas, from 61.2% of the total in 1987 to 65.8% in 1988.

In all, this year's 133 companies surveyed paid foreign governments nearly $6 billion; that compares with slightly more than $5 billion paid by the 130 companies surveyed last year. The biggest contributor in both years was IBM.

Foreign taxes account for the majority of electronics tax dollars



Source: ELECTRONIC BUSINESS

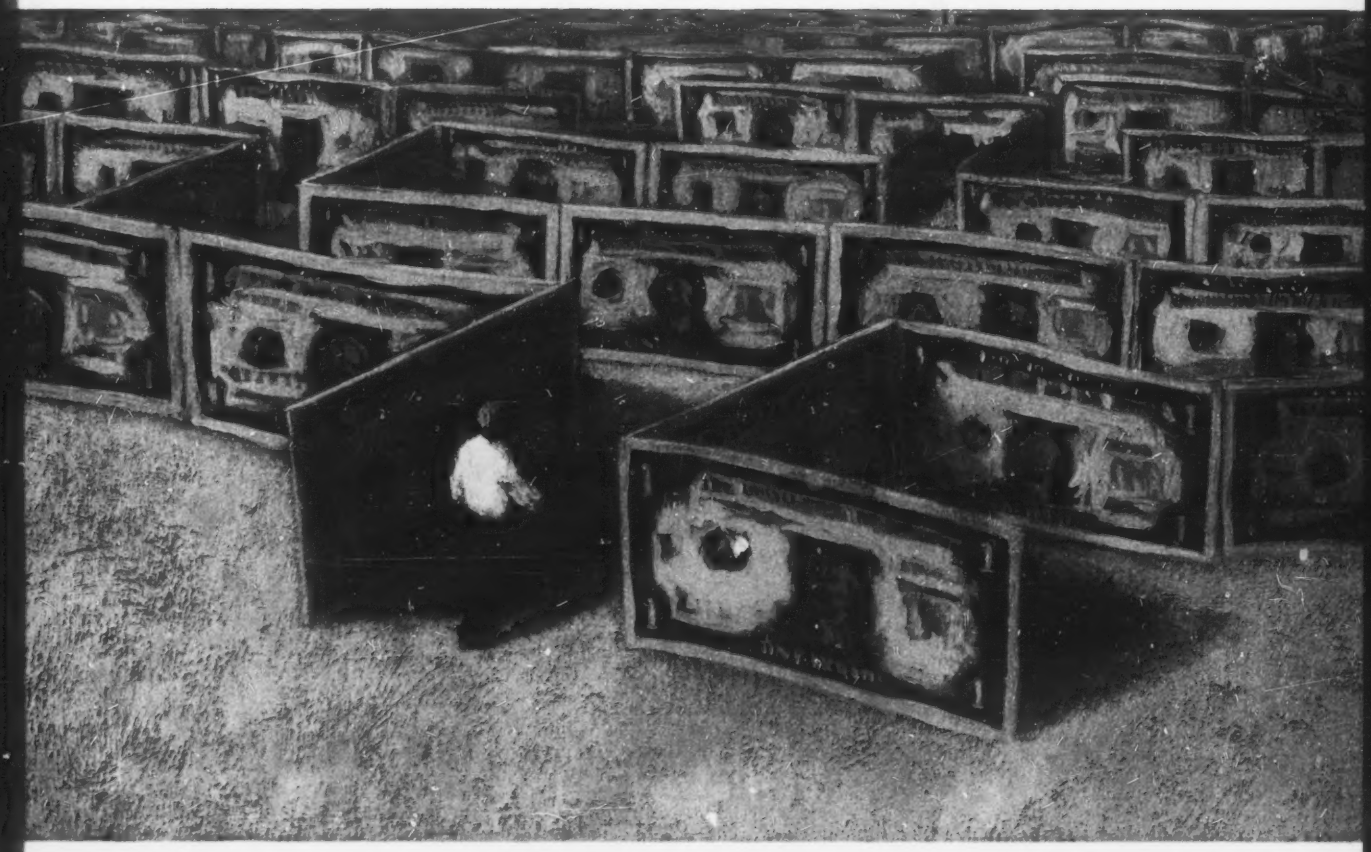
IBM at top of list

It should come as no surprise that IBM sits at the top of the ELECTRONIC BUSINESS taxpayers survey. In 1988, IBM accounted for more than a third of the taxes paid, setting aside $3.649 billion to be redistributed to foreign governments alone. As for domestic taxes, IBM didn't pay any federal income tax last year but, instead, received a tax credit to the tune of $132 million; it shelled out only $25 million for its state taxes.

A total of 18 companies in this year's survey received federal tax credits, totaling $203.26 million. That is up slightly from the 17 companies that got $196.38 million in credits in 1987. Likewise, seven companies received credits on state taxes, up from five in 1987. At the same time, six companies got credits on foreign taxes, compared with two the previous year.

No company comes close to IBM in terms of the sheer size of its tax bill. Indeed, second-placed Xerox Corp. set aside a mere 13% of IBM's bill, or $470 million, for foreign, federal, state and local governments in 1988. Another notable contributor to domestic government coffers was GM Hughes Electronics Corp. It had the biggest federal and state tax bills of those surveyed, totaling $336.4 million.

But what of the future? How will IBM, Xerox, GM Hughes and all of the other high-tech taxpayers fare in



the coming decade?

In general, the stream of tax reform that has been spewing out of Washington since the early 1980s is ongoing. As with any change of that magnitude, the biggest effect it has had is to increase uncertainty, tax experts say.

According to Coopers & Lybrand, a major international accounting firm, tax law changes since 1980 have made long-term tax planning "virtually impossible." When to buy assets, when to sell, when to allocate income and when to defer it all have been complicated because tax rules and rates are changing and will continue to do so.

Key advice of many accountants as the end of 1989 approaches is to declare income this year as opposed to deferring it. The rationale: Tax rates will only go up in the future. But just when and by how much, no one is willing to guess.

Adding to the uncertainty is the increase in complexity in the tax code. The most notable example is the alternative minimum tax (AMT), which all companies are required to calculate. Basically, the AMT means companies have to keep another set of records on top of the accounts they already keep for financial and tax purposes, adding to their load of paperwork.

The AMT calculation is having a particularly severe effect on small start-ups, especially in Silicon Valley, says Dennis Armstrong, a tax partner at Coopers & Lybrand in San Jose. These companies are finding they have to pay federal income tax based on the AMT calculations, even though they typically have net operating loss carry-forwards, Armstrong says. The alternative minimum tax regulations state that only 90% of the net operating loss carry-forwards can be sheltered. "That comes as a big surprise to many companies," says Armstrong.

A positive trend of the last few years is the relative lowering of the U.S. tax rate in relation to its trading partners

While the AMT stands out as a particularly gruesome example of complexity, it is not the exception to the rule. Instead, complexity, not simplicity, has been the result of the last round of reform. It is everywhere, most notably in international tax issues like the transfer of technology overseas — the "super royalty" provision — and is even spilling over into the individual states' tax codes.

The states are starting to be more aggressive in their tax policies which are driven by their own budgetary problems. Just dealing with the myriad state tax codes is more time consuming than dealing with the complexity of the AMT, says Robert Perlman, vice president for tax, customs and licensing at Intel Corp.

The biggest tax event this year is the impending legislation in Congress. It has its origins in the budget deficit and the need to raise at least $8 billion in additional revenue in fiscal year 1990 without introducing an out-and-out tax increase. Through last month, the bill had yet to be made into law.

Even with the threat of higher taxes, there nonetheless are some enticing tidbits for business. Of major benefit to the high-tech community is the proposal to make the research and experimentation tax credit per-

manent. The credit is scheduled to expire by the end of the year [ELECTRONIC BUSINESS, July 10, 1989]. One negative point in the legislation principally will affect defense electronics firms: a proposal to eliminate the completed contracts method of accounting and replace it with a 100% installment-based method. The disadvantage is that companies would pay tax on income they have not yet received.

Capital gains controversy

But most controversial is the lowering of the capital gains tax rate, a pet project of President Bush. Even House Ways and Means Committee Chairman Dan Rostenkowski (D-Ill.) appears to be in favor of reinstating the differential. However, as with all other tax issues this decade, the capital gains tax calculation will prove to be another nightmare in complexity, accountants say.

Adding to the complexity are the shenanigans of the Federal Accounting Standards Board (FASB). The board has fueled the fire by introducing Rule 96 and then postponing its required implementation date twice. The new rule is a balance sheet approach for reporting deferred taxes so they take into account all current and subsequent changes in tax rates. It is now set to go into effect at the end of 1990, but some companies have already implemented the changes and are floundering now because of lack of direction from FASB.

Look who got a tax credit from Uncle Sam

1988 federal tax credits ($ millions)

IBM	$132.00
Cullinet Software	18.92
Augat	10.72
Emerson Radio	7.81
Prime Computer	7.03
QMS	5.13
Storage Technolgy	4.50
Quantum	4.21
Perkin-Elmer	2.40
Oak Industries	2.19
Genicom	2.13
Apollo Computer	1.79
Tandon	1.39
Micropolis	1.10
BRIntec	0.60
SCI Systems	0.54
Audiovox	0.44
General DataComm	0.38

Source: ELECTRONIC BUSINESS

On the bright side, a positive trend of the last few years is the relative lowering of the U.S. tax rate in relation to its trading partners. This has turned the United States into a sort of tax haven, some accountants argue, with foreign capital flooding into the country to escape higher rates overseas. At the very least, others say, plant and office location decisions are being made on an economic rather than a tax basis.

As a result, some of these trading partners are now starting to lower their own rates. For instance, Denmark has lowered its tax rate from 50% to 35%, and France dropped its rate from 50% to 42%. Even Japan has been through its own brand of tax reform and lowered its corporate tax rates. Ironically, the effective tax rate for foreign firms with subsidiaries in-country is now slightly higher than it used to be, says Intel's Perlman.

Because of the increase in foreign capital in the United States, there is a paranoia on Capitol Hill that foreigners will take over the U.S. economy. The idea is to discourage such investment. There is a provision in the 1989 tax bill that would limit interest deductions by foreign shareholders that own parts of U.S. companies.

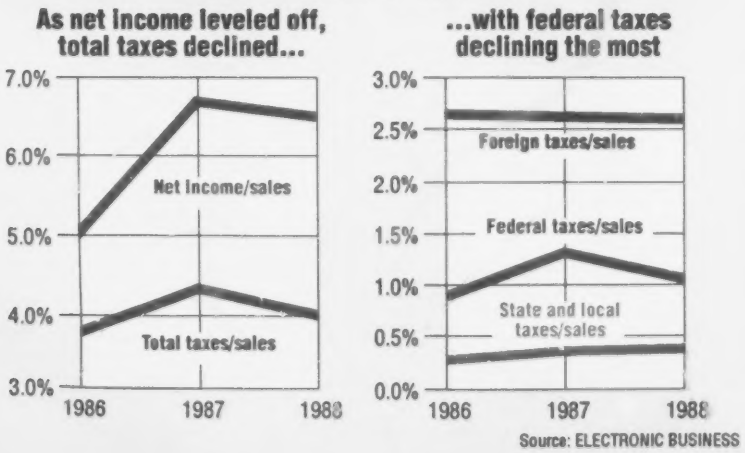
"That could have an impact on high technology because of retaliation" by foreign governments, says Sridar Iyengar, a tax partner in the international and high technology group of KPMG Peat Marwick in San Francisco, a major international accounting firm. "My concern is that if we go too far in taxing inbound investment, then there may be some backlash on the outbound investment," he says.

Iyengar also worries about the tax consequences for U.S. electronics companies when the trade barriers come down in Europe at the end of 1992. The Europeans are considering making European content a requirement for sale in their market. That has implications for auditing and introduces complexities if U.S. companies are forced to open European subsidiaries, he says. For instance, the European Community may require the diffusion process in semiconductors to be performed in Europe if product is to be sold there.

At the same time, U.S. companies may decide that they don't need multiple subsidiaries serving the EC and can run operations from one central office that covers the entire continent. If that is the case, there are certain negative U.S. tax rules affecting subsidiaries that operate outside of the country of incorporation, says Iyengar. □

Federal taxes take a smaller bite

Figures are as a percentage of sales



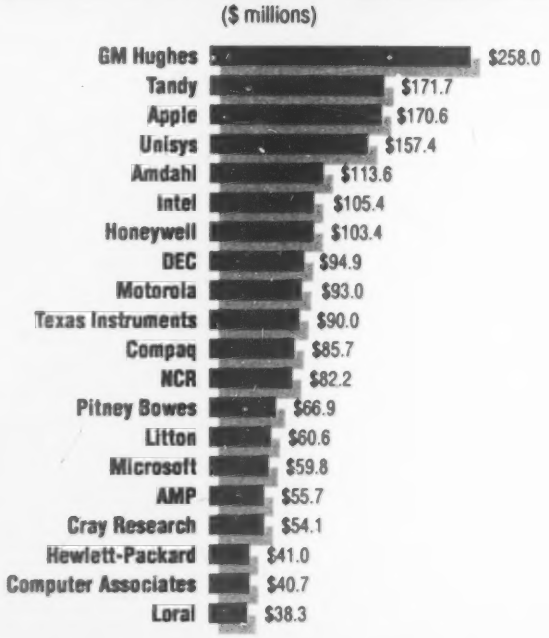
Source: ELECTRONIC BUSINESS

Related tax charts appear on next page

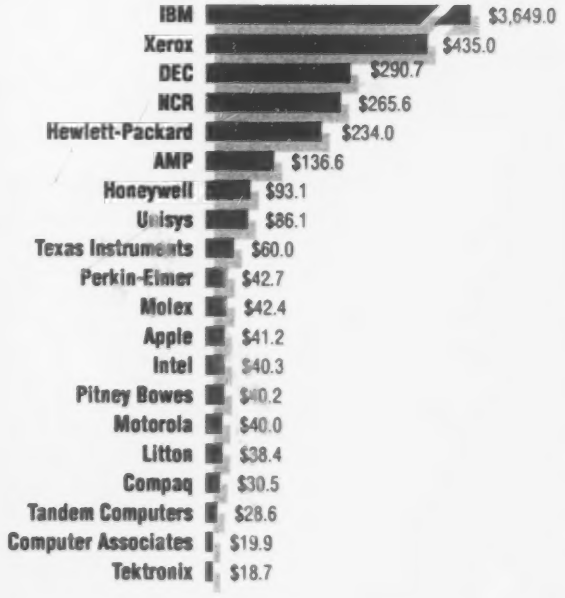
Top 20 electronics industry taxpayers — 1988

Total taxes

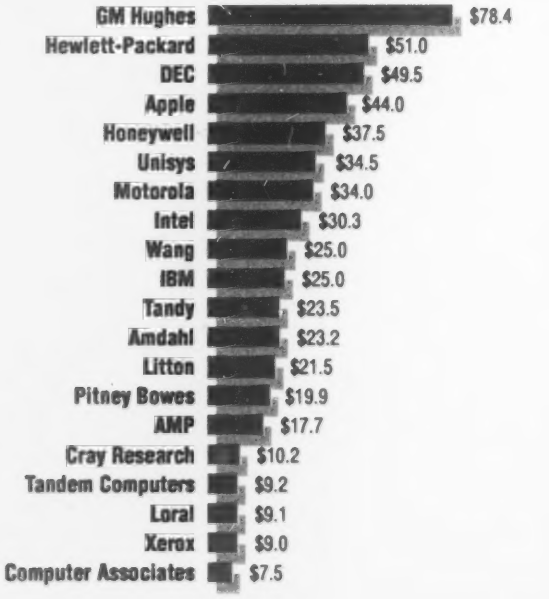
Federal taxes



Foreign taxes



State and local taxes



Source: ELECTRONIC BUSINESS

National distributors tighten their belts

Market softness is forcing U.S. electronics distributors to operate leaner and work on building better profits — which industry observers say is long overdue

BY JOHN McCREADIE

Being caught between a rock and a hard place is nothing new to electronics industrial distributors. After all, it is the nature of the business for any "middle man" sometimes to get squeezed between customers on one end and suppliers on the other. But for electronics distributors today, the squeeze is getting tighter.

Now, more than ever, distributors are being crunched between component makers pushing for bigger volumes of sales and customers demanding more value-added services.

"They walk a very fine line when it comes to dealing with both suppliers and customers," says Karen Payne, technology analyst for the brokerage house Wheat First Butcher & Singer of Richmond, Va.

Coming off a three-year period of brisk sales — averaging 17% annual growth — distributors are repositioning themselves, in the face of dismal industry forecasts, to weather some tough times.

The industry is undergoing "a mild recession," as one analyst calls it. With 1987 shipments totaling $7.3 billion, annual growth from 1987 to 1988 hit a booming 24%, according to the National Electronic Distributors Association (NEDA). But results in the first half of this year have been disappointing, and few observers expect the sector to edge significantly past the 1988 mark of $9 billion. Analyst projections for 1989 range from a 2% decrease to a highly optimistic growth of 10%.

And with uncertainties about a recession clouding the nation's economic future, the 1990 outlook for distribution is not much better. "We see only a 2% decrease to no growth for 1989, while 1990 is forecast at basically the same flatness, no growth to 2% growth," according to NEDA in a recent newsletter.

Says Joe Semmer, president of Hall-Mark Electronics Corp., "We're looking to flat industry growth in the third and fourth quarters [of calendar 1989] and 1990 being up between no growth and 5%" — echoing expectations of several industry executives.

In response to these tightening market conditions, such major distributors as Avnet Inc., Wyle Laboratories, Marshall Industries and Anthem Electronics, indeed, are changing the way they do business.

Distributors are shifting their focus from simply striving to increase sales to taking a much harder look at the profitability of the lines they carry — even if it results in friction with their key suppliers. Many semiconductor companies increasingly are realizing they do need strong distribution networks; some, such as Motorola Inc., are actually lowering their distributor pricing schedules on selected items.

With this profits review comes increased scrutiny of iongtime, standard distribution programs such as ship-from-stock-and-debit. The complicated inventory and pricing scheme originally was intended to protect distributors from fluctuations in the market. But because of the cash the plan ties up, the method has been a drag on profits for years.

Distributors face no growth through 1990

Long-term prospects

The industry's longer term prospects are reassuring, assuming there is no economic recession, according to analyst Clarke L. Walser, senior vice president for The Chicago Corp., an investment firm in Chicago. "Distribution sales should start showing year-to-year improvements," he says.

With few exceptions, manufacturers that have tried going it alone on distribution have found themselves in over their heads in a tough end of the electronics business. And, as the technology grows more complicated, customers are finding themselves relying more and more on the services distributors add, such as field application engineering.

"As product complexity grows, distribution becomes integral to the execution of our business," concurs Skip Streber, distribution manager for Texas Instruments Inc.'s Semiconductor Group.

Despite a profits crunch, "distributors now account for nearly 30% of the total sales of components in the United States, compared with less than 20% a decade ago," says analyst Walser, noting that the top 25 companies account for more than 85% of industry sales.

The industry's biggest blemish today is its five-year downtrend in gross margins. Walser notes gross margins have fallen 3% from an industry peak of 25.9% in 1984 to a subsequent high of 22.9% in 1988. Current estimates put industry margins about 23%. By comparison, net

after-tax margins have fallen from 4.0% to 2.7% during the same time period, Walser says. Net margins had fallen even further to 2.0% in the first half of this year, he says.

Wall Street, already with a dim view of high-tech companies, is concerned about the falling margins. Anthem president Peyton L. Gannaway points out: "Ultimately the lack of adequate sustained profits is what causes investor disinterest and the inability to raise the necessary debt or equity financing. And the resulting lack of cash is what causes a distributor to restructure or liquidate."

"Bolt to a billion"

One distributor that typifies the problem of focusing too much on the top line is Arrow Electronics Inc. of Melville, N.Y. Even though the company fulfilled its "bolt to a billion" goal last year with its acquisition of Kierulff Electronics, nearly doubling its sales to $1 billion, the success was of little comfort to shareholders, who watched profits plummet.

Financial analysts view Arrow's high level of debt as "crippling." According Analyst Richard C. Billy for Prudential-Bache Capital Funding, Arrow's quarterly break-even point is still $230 million, although that is down from $250 million 12 months ago. So Arrow is highly dependent on increasing quarterly sales "as a result of its very high degree of financial leverage," due in part to the Kierulff deal completed in late 1987.

"Arrow is the perfect example of how not to run a distribution business," says one industry executive who voiced an opinion shared by a few executives in the industry.

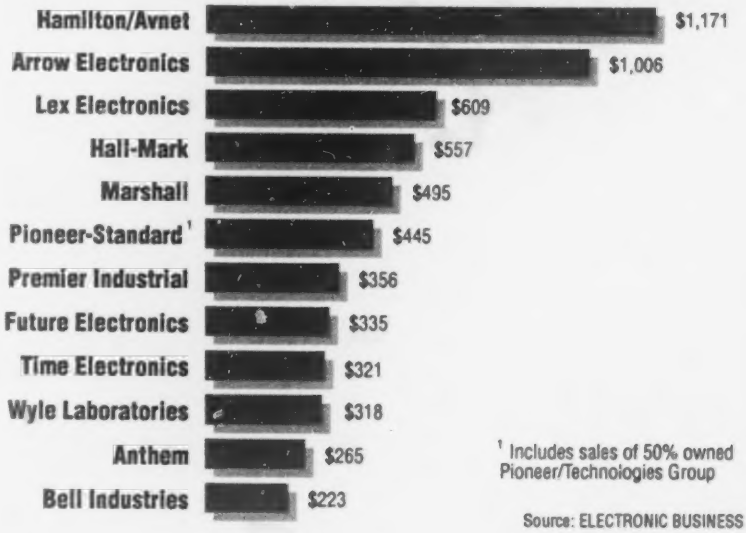
But Arrow president and chief executive Stephen P. Kaufman resents such a bleak portrayal of his company. "Our overall company gross margins are at 22%," Kaufman states flatly. "We're not a price seller."

According to analyst Payne, the shrinking margins may have bottomed out. "The financial conditions of the industry's price leaders — Arrow in particular — will simply not allow further margin erosion."

An aggressive restructuring at the industry leader, Avnet Inc., led by new chairman and chief executive Leon Machiz, is aimed at improving the bottom line and may be a key indicator that industry margins may have peaked. According to Payne, "The new emphasis on profitability at the largest and most visible electronics distributor, Avnet, is likely to have positive repercussions throughout the industry."

Top distributors in the U.S.

Calendar year 1988 electronics distribution sales ($ millions)



[1] Includes sales of 50% owned Pioneer/Technologies Group

Source: ELECTRONIC BUSINESS

Raves for Anthem

One successful distributor, Anthem, has financial analysts applauding its ability to maintain strong margins despite contracting demand. "Anthem is the best managed and most profitable distributor in the industry," raves Payne. Keeping focused on semiconductors and computer systems and carrying only 25 product lines, compared with the more than 100 lines typical of competitors, the San Jose-based distributor ended calendar 1988 with a net income of nearly $12 million on revenue of $265 million. Gross margin averaged 22.8%.

As other distributors follow Anthem's lead, most are wrestling with ways to bring profits up. "We're expensing ourselves out of business," says Hall-Mark's Semmer.

One of their biggest expenses is ship-from-stock-and-debit programs. Often criticized for their labor-intensive paperwork and endless inventory adjustments, ship-and-debit programs protect distributors from falling market prices. In theory, these price-protection clauses in franchise agreements sound great for distributors. The schemes allow them to recover, through debits, the difference between book costs and typically lower actual market prices.

The result of all this, distributors complain, is a pricing policy that shifts the cost of maintaining inventory from the manufacturer to them. "This is not a trivial matter," according to Walser. "We estimate as much as 20% of the industry's stated inventory today represents overpricing." Walser says it amounts to a "phantom inventory" and reduces the industry's gross margin by as much as a full percentage point.

One way distributors are eliminating debit-related paperwork, however, is with Electronic Data Interchange (EDI) computer systems. But the cost of implementing and expanding on such systems is high. Bell Industries Inc.'s chairman and chief executive Theodore E. Williams reports investing more than $30 million in hardware and software in its EDI system over the past five years.

Aside from improving EDI systems, distributors and suppliers are working together to cut the cost of ship-and-debit programs in other ways. Several suppliers, notably Harris Corp.'s Semiconductor Products Division, are creating programs to es-

timate quarterly debit expenditures and compensate distributors up front. "We only give ourselves credit after distributors ship to their customers," says George L. Gadzinski, Harris' director for national sales. This helps to eliminate tying up distributor revenue, says Gadzinski, and lessens the impact of "phantom" inventories.

That help is significant, since 60% to 70% of distribution transactions have a ship-and-debit attached, according to Gadzinski. And because the cost of handling a debit transaction is between $25 and $30, many suppliers are limiting the ship-and-debit programs to high volume, short-term sales.

Still other distributors are waiving ship-and-debit protection on selected products. For instance, Avnet's Machiz is turning risk-taking into profits. Buying selected products such as standard logic chips or other mature products at current market prices, Machiz gets units at a lower cost and bypasses many of the ship-and-debit costs. As a result, Avnet pulls more to its bottom line.

Using fewer distributors

Some distributors, meanwhile, are seeing suppliers tighten their distribution channels. This helps the distributor by limiting line competition. Advanced Micro Devices Inc., following its merger with Monolithic Memories Inc. in 1987, had 18 distributors in the United States. Today the company has just six domestically. And the Santa Clara, California-based chip maker is keeping an eye on how to reduce its distribution base further, says Al Frugaletti, director of sales and domestic distribution. "Ideally, all you need is four [distributors] in big cities and three in small ones," Frugaletti says.

Although not all suppliers are streamlining distribution channels, those that do are being applauded by distributors. "Harris has cut their distribution in half [in early 1989]," says Semmer of Hall-Mark. "That's a significant and bold move."

Passive component maker Sprague Technologies Inc. of Stamford, Conn., is another supplier praised for tightening its distribution channels. Five years ago, Sprague had 1,500 distribution channels; today that figure is 23. "We did the terminations by design to work more closely with our distributors," says Lyle Pirnie, vice president for distribution.

Even though "partnering" has become more than just a buzzword for both distributors and suppliers, conflicting ideas about strategy still exist. Installing more field application engineers (FAEs) is a prime example. "I'm pushing them to be more technical," says Jack Browne, director for marketing of Motorola's microprocessor products.

Indeed, as chip and microprocessor designs become more complex, manufacturers, including Intel Corp. and National Semiconductor Corp., want distributors to employ more technical expertise to sell their products. But adding more FAEs is not cheap. Industry executives put that cost close to $100,000 per engineer, including benefit packages.

To further exacerbate the situation, suppliers are feuding over who gets the best engineering representation. Motorola, says Browne, wants to be "on a level playing field" with Intel, accusing the Santa Clara-based chip maker of brute-forcing distributors into employing FAEs without concern for distribution profits.

The distribution industry's biggest blemish today is its five-year downtrend in gross margins

But Intel denies such accusations. "No manufacturer should expect a distributor to do anything for free," says Dennis C. Reker, worldwide distributor marketing manager. Intel claims to be one of the first to offer distribution incentives in an effort to garner more technical representation.

In its effort get better representation, Motorola is implementing its "Blue Chip Program." Essentially, the incentive program will give participating distributors an opportunity to buy selected blue chip products at less cost in return for giving Motorola "parity" technical field support with its competitors, says Browne.

And since distributors will then have more technical expertise, Motorola will send some of its manufacturer-direct customers into the distribution channel, boosting both sales and profits for distributors.

But shifting manufacturers' direct customers to distributors is nothing more than "hype," says National Semiconductor's Keith Kolerus, vice president and director of its distribution unit. "Most manufacturers are trying to move customers to distribution channels because customers are requiring more service, not as an FAE incentive."

FAE alternative

Distributors themselves are seeking cost effective ways to give manufacturers the technical representation they desire. Many are avoiding the tremendous investment in technical personnel by better training their current field representatives.

The sales staff at Anthem, for example, just recently completed a vigorous six-month technical training program on semiconductors and computer systems. Those who passed the final test are now "Anthem Certified," says chairman and chief executive Robert S. Throop, a position that not only garners respect, but also more sales commission.

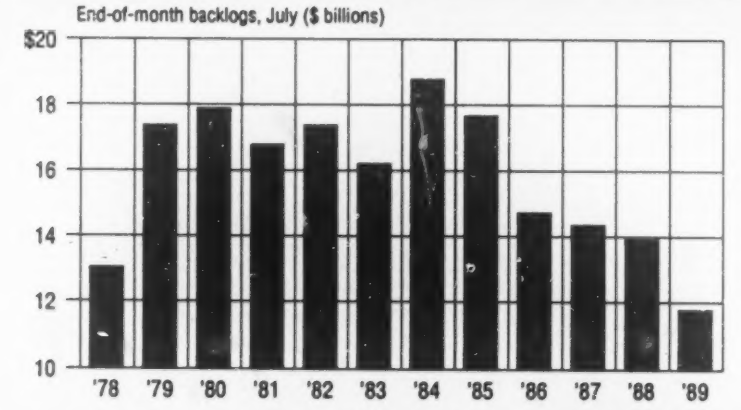
Wyle Laboratories, despite industry-wide criticism over the profitability of entering the high-investment world of application specific integrated circuits design, plans to open a seventh ASIC design center in Boston next year. Another one is nearing completion in Dallas. Ralph L. Ozorkiewicz, president of Wyle's Electronics Marketing Group, estimates that an investment of $1.5 million is required to set up the ASIC facilities. Still, that cost does not include technicians and engineers, the largest part of such an investment, industry executives contend.

Avnet's Machiz says his company's dedication to the ASIC market will "stay where it is now." Approaching the market with caution, Machiz adds that increased efforts there will only occur if "the profitability justifies additional investment."

Meanwhile, as flat sales growth pushes distributors to be more efficient and profit driven, several analysts and executives view industry change as extremely positive, if not a bit tardy. Says Sprague's Pirnie: "Cutting needless expenses is long overdue for distributors." □

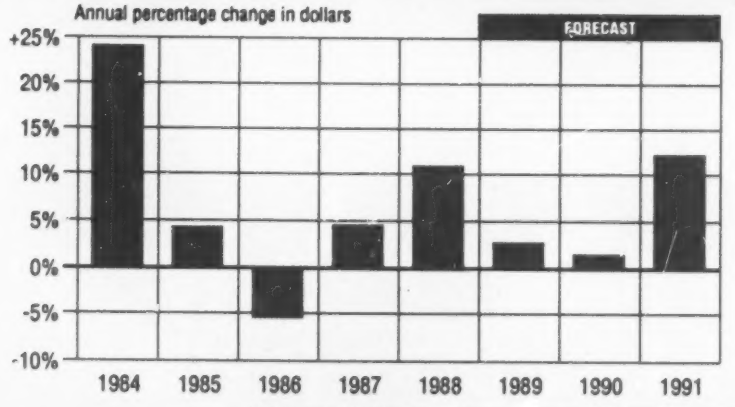
A related story appears on the next page

Shrinking computer backlogs



Data source: U.S. Commerce Department; Forecast: Cahners Economics

Growth in computer shipments shrinks



Data source: U.S. Commerce Department; Forecast: Cahners Economics

Computer backlogs shrink to historic lows

The computer and office equipment manufacturers really took it on the chin. New orders for their equipment sagged 3.2% from June to July and took a whopping drop of 8.2% from July of last year. Shipments, which had been relatively strong despite waning growth in new orders over the last year, were curtailed sharply as well. From June to July, shipments fell 7%, or a decline of 0.3% from July 1988.

The computer industry may be getting into a real bind should the economic contraction go deeper or run longer than currently expected. According to U.S. Commerce Department data, billings for the industry have been outpacing bookings since 1984. That means backlogs have been dwindling.

As of the end of July, unfilled orders for the computer industry amounted to $11.8 billion. That value is the lowest since April 1978 and represents only two times monthly shipments at their current level.

This means the computer and office equipment makers don't enjoy a large buffer to keep production humming as they wait for growth in new orders to turn upward once again. By the end of July, employment in the computer manufacturing sector averaged 477,900, about the same as the figure in July of last year.

MADELINE FRANCHI

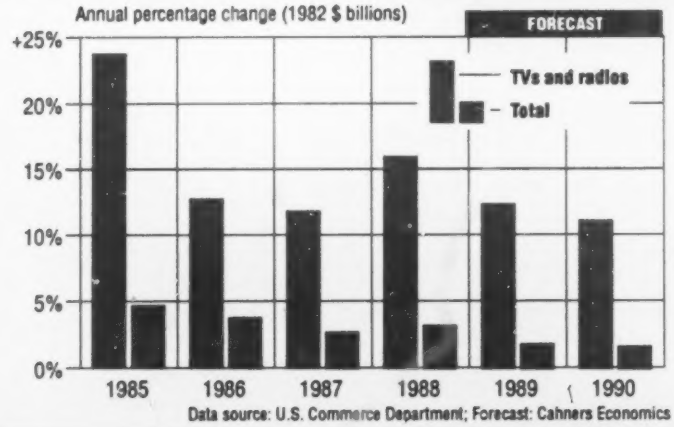
Computer market database

Latest quarter: 2nd quarter 1989	Latest quarter	Previous quarter	Change	Year ago	Change	Next year	Change
Industrial production (SA,1977=100, qtr. average)	350.32	338.67	+3.44	314.97	+11.22%	350.46	+0.04%
Shipments (SA, $ millions, qtr. total)	$17,865	$16,840	+6.09%	$17,290	+3.33%	$17,376	-2.73%
New orders (SA, $ millions, qtr. total)	$16,870	$16,570	+1.81%	$17,381	-2.94%	$16,592	-1.65%
Unfilled orders (SA, $ millions, qtr. total)	$12,206	$13,201	-7.54%	$13,820	-11.68%	$11,914	-2.39%
Inventory-to-shipment ratio (SA, end of qtr.)	1.94	2.07	—	1.91	—	2.05	—
All employees (thousands, end of qtr.)	476.9	474.8	+0.44%	474.9	+0.42%	464.6	-2.58%
Production workers (thousands, end of qtr.)	155.0	155.2	-0.13%	155.7	-0.45%	148.0	-4.53%
Business purchases (current $ billions)	$15.42	$14.70	+4.90%	$15.00	+2.80%	$15.76	+2.20%
Business purchases (1982 $ billions)	$42.02	$39.52	+6.33%	$39.30	+6.92%	$43.78	+4.19%

SA = seasonally adjusted; all other data is not seasonally adjusted

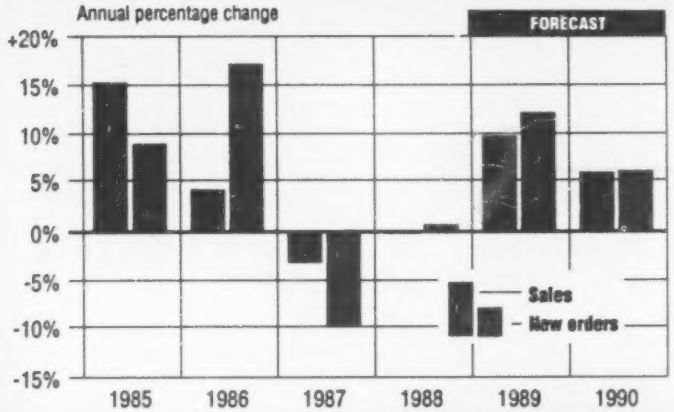
Data sources: Federal Reserve Board, U.S. Bureau of the Census and U.S. Bureau of Labor Statistics
All data for SIC 357, except industrial production, SIC 357-9. Forecasts: Cahners Economics

Consumer electronics spending



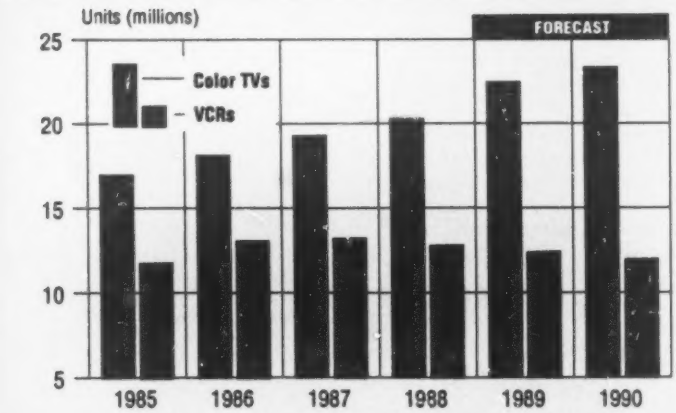
Data source: U.S. Commerce Department; Forecast: Cahners Economics

Growth in TV and radio sales and new orders



Data source: U.S. Commerce Department; Forecast: Cahners Economics

Color TV and VCR sales to dealers



Data source: Electronic Industries Association; Forecast: Cahners Economics

Consumer electronics growth bucks the trend

Consumer electronics growth continues to buck the slowdown trend this year. Personal consumption expenditures for TV and radio equipment totaled $71.5 billion during the second quarter of 1989, a 14.3% gain from the same quarter a year earlier. Spending growth for consumer electronics continues to outrace total personal consumption, which increased only 2.6% in the second quarter above year-ago levels. Cahners Economics expects spending on television and radio equipment to rise 12.5% in 1989 and 11.3% at year-end 1990.

One reason that consumption of consumer electronics has increased over the year is higher interest rates and the anticipation of lower rates in the future. Many consumers cut back on their spending for big-ticket items such as automobiles and homes, buying less expensive items like TVs, VCRs and other electronics products instead. While other electronics industries are experiencing weaker sales growth this year, the consumer electronics industry continues to hold its own.

The U.S. Commerce Department reported that new orders for TV and radio equipment totaled nearly $3 billion at the end of the second quarter compared with the same quarter a year ago, and continued to expand 8.5% from June to July. Meanwhile, shipments slipped 2.1% from June to July, totaling just over $1 billion. Despite this small decline, July sales still remained 14.4% above year-ago levels. Cahners Economics forecasts orders to increase 12% in 1989 and 6.3% in 1990, while sales are expected to grow 9.9% in 1989 and a milder 6% in 1990.

According to the Electronic Industries Association, sales of color TVs to dealers were up 12.7% in August from a very slow month of sales in July. During the month of August, 1.56 million color TVs were sold, on par with sales from a year ago. Cahners Economics expects color TV sales to increase 11.5% in 1989 and only 2.8% in 1990. Nearly 773,000 VCRs and 156,000 camcorders were sold to dealers during the month of August, up 8.5% from last year. The steady sale of VCRs and camcorders has acted as a synergy for TV sales. Many consumers who have purchased new video equipment for their homes have also invested in a new TV.

With the continued introduction of new audio/video products and the relatively low price for a new television set, sales will remain steady. After declines in 1987 and no growth in 1988, consumer electronics sales will grow more than 5% in 1989 and 1990.

MADELINE FRANCHI